Attorney Docket No.: NL 000287

IN THE CLAIMS:

1. (Currently Amended) A method of modeling [[(2,22)]] a target spectrum (S) by determining filter parameters (p_i,q_i) of a filter [[(41)]] which has a frequency response (S') approximating the target spectrum (S),

characterized in that the method comprises the steps of:

splitting [[(22)]] the target spectrum in at least a first part and a second part in response to a determination by a logarithmic regression, such that an iterative procedure is used in a frequency domain to obtain a better split than an initial split until a stop criterion is met;

using [[(22)]] a first modeling operation on the first part of the target spectrum (S) to obtain auto-regressive parameters (p_i);

using [[(22)]] a second modeling operation on the second part of the target spectrum to obtain moving-average parameters (q_i); and

combining [[(22)]] the auto-regressive parameters (p_i) and the moving-average parameters (q_i) to obtain the filter parameters (p_i,q_i).

2. (Currently Amended) A method as claimed in claim 1, wherein the second modeling operation [[(22)]] comprises the step of:

using the first modeling operation on a reciprocal of the second part of the target spectrum.

3. (Cancelled)

4. (Currently Amended) A method as claimed in ~~claim 3~~ claim 1, wherein the iterative procedure comprises:

using a first modeling operation on a first part of a previous split to obtain new auto-regressive parameters;

using a second modeling operation on a second part of a previous split to obtain new moving-average parameters; and

re-attributing parts of the first part of the previous split that could not be modeled accurately by the first modeling operation to the second part of the previous split, and parts of the

second part of the previous split that could not be modeled accurately by the second modeling operation to the first part of the previous split to obtain a new split.

5. (Original) A method as claimed in claim 4, wherein the step of re-attributing comprises:

dividing the first part of the previous split by an estimate of the target spectrum based on moving-average parameters; and

dividing the second part of the previous split by an estimate of the target spectrum based on auto-regressive parameters.

6. (Cancelled).

7. (Currently Amended) A method as claimed in ~~claim 2~~ claim 1, wherein the initial split is determined by:

$$P_A = \frac{1+m(P)}{2} P$$

$$P_B = -\frac{1-m(P)}{2} P$$

where:

$P = \log$*(the target spectrum)*

$P_A = \log$*(the first part of the target spectrum)*

$P_B = \log$*(the second part of the target spectrum)*

and m is a mapping function with $m: \Re \rightarrow [-1,1]$.

8. (Currently Amended) A device [[(2)]], comprising:

means [[(22)]] for determining filter parameters (p_i,q_i) of a filter [[(41)]] which has a frequency response (S') approximating a target spectrum,

characterized in that the device further comprises:

splitting [[(22)]] the target spectrum in at least a first part and a second part in response to a determination by a logarithmic regression, such that an iterative procedure is used in a frequency domain to obtain a better split than an initial split until a stop criterion is met;

means [[(22)]] for using a first modeling operation on the first part of the target spectrum (S) to obtain auto-regressive parameters (p_i);

means [[(22)]] for using a second modeling operation on the second part of the target spectrum (S) to obtain moving-average parameters (q_i); and

means [[(22)]] for combining the auto-regressive parameters (p_i) and the moving-average parameters (q_i) to obtain the filter parameters (p_i,q_i).

9. (Currently Amended) A method of suppressing noise [[(6)]] in an audio signal (A), the method comprising:

modeling [[(60)]] a spectrum of the noise by determining filter parameters (p_i,q_i) of a filter [[(61)]] which has a frequency response approximating the spectrum of the noise;

obtaining [[(61)]] reconstructed noise by filtering [[(61)]] a white noise (y) with a filter [[(61)]], which properties are determined by the filter parameters (p_i,q_i); and

subtracting [[(62)]] the reconstructed noise from the audio signal (A) to obtain a noise-filtered audio signal ({A});

the step of modeling [[(60)]] comprising:

splitting [[(60)]] the spectrum in at least a first part and a second part <u>in response to a determination by a logarithmic regression, such that an iterative procedure is used in a frequency domain to obtain a better split than an initial split until a stop criterion is met;</u>

using [[(60)]] a first modeling operation on the first part of the spectrum to obtain auto-regressive parameters (p_i);

using [[(60)]] a second modeling operation on the second part of the noise spectrum to obtain moving-average parameters (q_i); and

combining [[(60)]] the auto-regressive parameters (p_i) and the moving-average parameters (q_i) to obtain the filter parameters (p_i,q_i);

10. (Currently Amended) A device [[(6)]] for suppressing noise in an audio signal (A), the device comprising:

means [[(60)]] for modeling a spectrum of the noise by determining filter parameters (p_i,q_i) of a filter [[(61)]] which has a frequency response approximating the spectrum of the noise;

means [[(61)]] for obtaining reconstructed noise by filtering [[(61)]] a white noise (y) with a filter [[(61)]], which properties are determined by the filter parameters (p_i,q_i); and

means [[(62)]] for subtracting the reconstructed noise from the audio signal (A) to obtain a noise-filtered audio signal ({A});

the means for modeling [[(60)]] comprising:

means [[(60)]] for splitting the spectrum in at least a first part and a second part <u>in response to a determination by a logarithmic regression, such that an iterative procedure is used in a frequency domain to obtain a better split than an initial split until a stop criterion is met</u>;

means [[(60)]] for using a first modeling operation on the first part of the spectrum to obtain auto-regressive parameters (p_i);

means [[(60)]] for using a second modeling operation on the second part of the noise spectrum to obtain moving-average parameters (q_i); and

means [[(60)]] for combining the auto-regressive parameters (p_i) and the moving-average parameters (q_i) to obtain the filter parameters (p_i,q_i);

11. (Currently Amended) A method of encoding [[(2,21)]] an audio signal (A), comprising the steps of:

determining [[(200)]] basic waveforms in the audio signal (A);

obtaining [[(21)]] a noise component (S) from the audio signal (A) by subtracting the basic waveforms from the audio signal (A);

modeling [[(22)]] a spectrum of the noise component (S) by determining filter parameters (p_i,q_i) of a filter [[(41)]] which has a frequency response (S') approximating the spectrum of the noise component (S); and

including [[(23)]] the filter parameters (p_i,q_i) and waveform parameters (C_i) representing the basic waveforms in an encoded audio signal (A');

the step of modeling comprising:

splitting [[(22)]] the spectrum (S) in at least a first part and a second part <u>in response to a determination by a logarithmic regression, such that an iterative procedure is used in a frequency domain to obtain a better split than an initial split until a stop criterion is met</u>;

using [[(22)]] a first modeling operation on the first part of the spectrum (S) to obtain auto-regressive parameters (p_i);

using [[(22)]] a second modeling operation on the second part of the noise spectrum (S) to obtain moving-average parameters (q_i); and

combining [[(22)]] the auto-regressive parameters (p_i) and the moving-average parameters (q_i) to obtain the filter parameters (p_i,q_i).

12. (Currently Amended) A method of decoding [[(4)]] an encoded audio signal (A'), comprising the steps of:

receiving [[(40)]] an encoded audio signal (A') comprising waveform parameters (C_i) representing basic waveforms and filter parameters (p_i,q_i), the filter parameters (p_i,q_i) being a combination of auto-regressive parameters (p_i) and moving-average parameters (q_i) as acquired in accordance with the method of claim 11;

filtering [[(41)]] a white noise signal (y) to obtain a reconstructed noise component (S'), which filtering is determined by the filter parameters (p_i,q_i);

synthesizing [[(42)]] basic waveforms based on the waveform parameters (C_i); and

adding [[(43)]] the reconstructed noise component (S') to the synthesized basic waveforms to obtain a decoded audio signal (A'').

13. (Currently Amended) An audio encoder [[(2)]] comprising:

means [[(200)]] for determining basic waveforms in the audio signal (A);

means [[(21)]] for obtaining a noise component (S) from the audio signal (A) by subtracting [[(21)]] the basic waveforms from the audio signal (A);

means [[(22)]] for modeling a spectrum of the noise component (S) by determining filter parameters (p_i,q_i) of a filter [[(41)]] which has a frequency response (S') approximating the spectrum of the noise component (S); and

means [[(23)]] for including the filter parameters (p_i,q_i) and waveform parameters (C_i) representing the basic waveforms in an encoded audio signal (A');

the means [[(22)]] for modeling comprising:

means [[(22)]] for splitting the spectrum (S) in at least a first part and a second part <u>in response to a determination by a logarithmic regression, such that an iterative procedure is</u>

used in a frequency domain to obtain a better split than an initial split until a stop criterion is met;

means [[(22)]] for using a first modeling operation on the first part of the spectrum (S) to obtain auto-regressive parameters (p_i);

means [[(22)]] for using a second modeling operation on the second part of the noise spectrum (S) to obtain moving-average parameters (q_i); and

means [[(22)]] for combining the auto-regressive parameters (p_i) and the moving-average parameters (q_i) to obtain the filter parameters (p_i,q_i).

14. (Currently Amended) An audio player [[(4)]] comprising:

means [[(40)]] for receiving an encoded audio signal (A') comprising waveform parameters (C_i) representing basic waveforms and filter parameters (p_i,q_i), the filter parameters (p_i,q_i) being a combination of auto-regressive parameters (p_i) and moving-average parameters (q_i) as acquired in accordance with the method of claim 11;

means [[(41)]] for filtering a white noise signal (y) to obtain a reconstructed noise component (S'), which filtering is determined by the filter parameters (p_i,q_i);

means [[(42)]] for synthesizing basic waveforms based on the waveform parameters (C_i); and

means [[(43)]] for adding the reconstructed noise component (S') to the synthesized basic waveforms to obtain a decoded audio signal (A'').

15. (Currently Amended) An audio system comprising an audio encoder [[(2)]] as claimed in claim 13~~ and an audio player (4) as claimed in claim 14~~.

16. (Original) An encoded audio signal (A') comprising:

waveform parameters (C_i) representing basic waveforms; and

a spectrum of a noise component (S) represented by a combination of auto-regressive parameters (p_i) and moving-average parameters (q_i) as acquired in accordance with the method of claim 11.

17. (Currently Amended) A storage medium [[(3)]] on which an encoded audio signal (A') as claimed in claim 16 is stored.

18. (New) An audio system comprising an audio player as claimed in claim 14.